

## **CLAIMS**

### **What is claimed is:**

1. A transmitter Medium Access Control (MAC) layer, comprising:  
a clock synchronization unit having a timing device with a clock speed;  
at least one frequency divider coupled to said clock synchronization unit, said frequency divider configured to reduce said clock speed to generate a desired pulse repetition frequency;  
at least one slot allocation unit coupled to said at least one frequency divider; and  
a multiplexer/demultiplexer operatively coupled to said at least one slot allocation unit, said multiplexer/demultiplexer configured to merge a plurality of outgoing signals and configured to distribute a plurality of incoming signals.
2. The transmitter MAC layer recited in claim 1, wherein each of said at least one slot allocation unit has a particular pulse repetition frequency.
3. The transmitter MAC layer recited in claim 1, wherein each of said at least one slot allocation unit is configured to support different modulation techniques.
4. The transmitter MAC layer recited in claim 1, wherein each of said at least one slot allocation unit is configured to support pulse amplitude modulation.

5. The transmitter MAC layer recited in claim 1, where each of said at least one slot allocation unit is configured to support on-off keying.
6. An ultra wide band transmitter Medium Access Control (MAC) layer, comprising:  
a clock synchronization unit;  
at least one frequency divider communicating with the clock synchronization unit, the frequency divider structured to generate a pulse repetition frequency;  
at least one slot allocation unit communicating with the at least one frequency divider;  
and  
a multiplexer/demultiplexer communicating with the at least one slot allocation unit, the multiplexer/demultiplexer structured to merge a plurality of outgoing ultra wide band pulses and configured to distribute a plurality of incoming ultra wide band pulses.
7. The ultra wide band transmitter Medium Access Control (MAC) layer of claim 6, wherein the clock synchronization unit further comprises a timing device with a clock speed.
8. The ultra wide band transmitter Medium Access Control (MAC) layer of claim 6, wherein each of the at least one slot allocation unit has a particular pulse repetition frequency.
9. The ultra wide band transmitter Medium Access Control (MAC) layer of claim 6, wherein each of the at least one slot allocation unit is configured to support different modulation techniques.

10. The ultra wide band transmitter Medium Access Control (MAC) layer of claim 6, wherein each of the at least one slot allocation unit is configured to support on-off keying.
11. An ultra wide band Medium Access Control (MAC) layer, comprising:
  - a time division multiple access frame comprising a plurality of slots, with each slot configured to receive at least one ultra wide band pulse.
12. The ultra wide band Medium Access Control (MAC) layer of claim 11, wherein the time division multiple access frame operates in an aloha mode.
13. The ultra wide band Medium Access Control (MAC) layer of claim 11, wherein an ultra wide band pulse repetition frequency varies between different slots.
14. The ultra wide band Medium Access Control (MAC) layer of claim 11, wherein an ultra wide band pulse position varies between different slots.
15. The ultra wide band Medium Access Control (MAC) layer of claim 11, wherein an ultra wide band pulse amplitude varies between different slots.